

What is claimed is:

1. A method of arbitrating access to a bus having a plurality of ports, said method comprising the steps of:

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a) assigning each port a unique address which defines a unique priority value;

b) generating a repeating, variable length frame;

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c) bidding for access to the bus during at least one predefined clock cycle of the frame;

d) granting access to the bidding port having the highest priority; and

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e) placing the other bidding port addresses in a queue.

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2. A method according to claim 1, wherein each port maintains a copy of the queue.

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3. A method according to claim 1, wherein bidding is only permitted when the queue is empty.

4. A method according to claim 1, wherein at least one cycle of the frame is reserved for transmission of message length, at least one cycle is reserved for transmission of destination address, and at least one
5 cycle is reserved for the port having the destination address to assert a busy signal on the data bus.

5. A method according to claim 4, further comprising the
10 steps of:

f) the port having access to the data bus transmitting a message length during the message length cycle of the frame; and

15 g) the port having access to the data bus transmitting a destination address during the destination address cycle of the frame.

20 6. A method according to claim 5, further comprising the steps of:

25 h) the port having the destination address asserting the busy signal during the busy cycle of the frame; and

i) the port attempting to transmit to the busy port repeating bidding until the message is sent.

7. A method for improving bus performance and bandwidth utilization in a parallel bus LAN, said method comprising the steps of:

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a) providing a parallel bus LAN having a plurality of data lines and a clock bus; and

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b) avoiding data collisions by implementing, during a portion of a variable length time frame, a bidding arbitration scheme such that only one bus user can transmit on the bus at one time.

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8. A method according to claim 7, further comprising the step of increasing the number of data lines and/or the frequency of the clock bus to increase the bandwidth of the LAN.

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9. A method according to claim 7, further comprising the step of avoiding glare by assigning a priority to each bus user and granting access to the bus to the highest priority user when two or more users simultaneously bid for bus access.

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10. A method according to claim 7, further comprising the step of providing a plurality of bus ports, each bus port having a configurable hardware interface.

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11. A method for improving bus performance and bandwidth utilization in a parallel bus LAN, said method comprising the steps of:

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- a) providing a parallel bus LAN having a plurality of data lines and a clock bus; and
- b) providing a plurality of bus ports, each bus port having a configurable hardware interface to thereby enable the LAN to be adapted for use with differing hardware interfaces.

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20 12. A method according to claim 11, further comprising the step of avoiding data collisions by implementing a bidding arbitration scheme such that only one bus user can transmit on the bus at one time.

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13. A method according to claim 12, wherein said bidding arbitration scheme is implemented during a portion of a variable length time frame.

14. A method according to claim 12, further comprising
the step of avoiding glare by assigning a priority to
each bus user and granting access to the bus to the
5 highest priority user when two or more users
simultaneously bid for bus access.

15. A method according to claim 11, further comprising
the step of increasing the number of data lines and/or
10 the frequency of the clock bus to increase the bandwidth
of the LAN.